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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/056,554	01/23/2002	James S. Neumiller	1023-029US01	8831

28863 7590 02/16/2005

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EXAMINER	
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ART UNIT	PAPER NUMBER
2114	

DATE MAILED: 02/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/056,554	NEUMILLER ET AL.	
	Examiner	Art Unit	
	Aaron D Matthew	2114	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11/26/2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *42-46* is/are allowed.

6)☒ Claim(s) *1-41, and 47-48* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 April 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *04/24/2002*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-48 have been examined.

Claim Objections

2. Claim 48 is objected to because of the following informalities: Line one should be changed to read, "...wherein the hardware modules includes a therapy...". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 33, 39, and 41-46 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 33 recites the limitation "the handshake signal" in line 4. There is insufficient antecedent basis for this limitation in the claim. Examiner suggests that the line should be changed to read, "...reset the third embedded processor when the another handshake signal is...".

Claim 39 recites the limitation "the watchdog timer" in line 6. There is insufficient antecedent basis for this limitation in the claim. Examiner suggests that the line should be changed to read, "...to the watchdog timer hardware unit;".

Claim 41 recites the limitation "watchdog timer" in line 4. There is insufficient antecedent basis for this limitation in the claim. It is unclear as to whether this limitation is meant to refer the "watchdog timer software process" or the "watchdog timer hardware unit", disclosed in claim 11. Examiner suggests that the language of line 4 be changed accordingly.

Claim 42 recites the limitation "the first watchdog timer hardware unit" in line 5. There is insufficient antecedent basis for this limitation in the claim. Examiner suggests changing line 4 of the claim to read, "first watchdog timer hardware unit that resets...".

Claims 43-46 are rejected based on their dependence on claim 42.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 3, 7, 9-11,13, 17, 19-21, 24, 28, 30-32, 35, 38, 41, 47 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hood, Jr., (U.S. 5,746,203), and further in view of Owen et al, (US 6,304,780).

Regarding claim 21, Hood, Jr. teaches a medical device, ("patient monitor", see col. 1, line 9), comprising a first functional module comprising a first embedded processor, (note Figure 1, CPU 12), configured to generate a handshake signal, (see col. 2, lines 5-8), and a second functional module comprising a second embedded processor, (note Figure 1, processor 28; also note col. 1, lines 58-60 in which failsafe supervisor system is implemented in a separate one-chip module), with a watchdog timer software process corresponding to the watchdog timer hardware unit, (see col. 2, lines 45-53, and note col. 5, lines 25-26), configured to receive the handshake signal, (see col. 2, lines 13-19), and to power down said first embedded processor into a safe state when the handshake signal is not provided within a prescribed time interval, (note col. 2, lines 45-53). The failsafe supervisor processing means, (see col. 2, lines 46-57), is a hardware unit comprising a watchdog timer function. Therefore, the failsafe supervisor of Hood, Jr. is interpreted as being a watchdog timer hardware unit.

Hood, Jr. fails to teach that the second embedded processor is configured to reset the first embedded processor when the handshake signal is not provided within a prescribed time interval.

Owen teaches a medical device, (see Abstract), in which a watchdog timer software process corresponding to a watchdog timer hardware unit is configured to reset a first embedded processor when a handshake signal is not detected within a prescribed time interval, (see col. 34, lines 42-59).

Hood, Jr. and Owen are analogous because they are from the same field of endeavor, viz., watchdog timer supervision of a processor in a medical device.

As Hood, Jr. teaches that said second embedded processor is able to both power up and power down said first embedded processor, one of ordinary skill in the art, in view of Owen, would have clearly recognized that the step of powering down said first embedded processor upon the detection of failure could be replaced with the step of resetting said first embedded processor. Owen teaches a medical device in which the cause of failure can be corrected by resetting said first embedded processor, (see col. 34, lines 57-59). The step of automatically resetting the first embedded processor to correct the cause of failure eliminates the requirement of having an external operator monitor the device. One of ordinary skill in the art would have been motivated to include the step of resetting said first embedded processor

in the system disclosed in Hood, Jr. in the event that said step of resetting would correct the cause of failure, in order to eliminate the requirement of an external operator monitoring the device, (note Owen, col. 34, lines 59-67).

Regarding claims 1 and 11, the method and processor-readable medium containing processor-executable instructions described in these claims are rejected based on the same rationale applied above in reference to claim 21. The functionality of both the method and the processor-readable medium containing processor-executable instructions is identical to the functionality of the medical device discussed above.

Claim 47 is rejected because it recites limitations similar to claim 21, except in the context of an external defibrillator, (note that Owen teaches an external defibrillator as a medical device, see Abstract).

Regarding claim 48, see Owen, Fig. 8, elements 66, 90, and 56; note, also, col. 21, lines 21-34.

Regarding claim 24, Hood, Jr. teaches that the medical device of claim 21 comprises output hardware, (note col. 2, lines 2-11), wherein at least one of the first and second embedded processors is configured to disable the output hardware when the

handshake signal is not provided within the prescribed time interval, (note col. 4, lines 29-32).

Hood, Jr. fails to teach that said output hardware is therapy output hardware.

Owen teaches a medical device comprising therapy output hardware, (see col. 32, lines 17-31), wherein an embedded processor is configured to disable the system, and consequently, disable therapy output hardware when the handshake signal is not provided within the prescribed time interval, (see col. 34, lines 52-67).

In view of Owen, one of ordinary skill in the art would have clearly recognized the applicability of a watchdog timer system as disclosed in Hood, Jr. to a medical device comprising therapy output hardware. In the event of a fault in the medical device it would have been clearly recognized in the art that said therapy output hardware should be disabled to prevent harm to the recipient of said therapy. One of ordinary skill in the art would have considered it obvious and would have been properly motivated to combine the system disclosed in Hood, Jr. to a medical device comprising therapy output hardware in order to enable the disabling of potentially harmful output from a failed device.

Regarding claims 3 and 13, the method and processor-readable medium containing processor-executable instructions described in these claims are rejected based on the same rationale applied above in reference to claim 24. The functionality of both the method and the processor-readable medium containing processor-executable instructions is identical to the functionality of the medical device discussed above.

Regarding claim 28, Hood, Jr. teaches that the medical device comprises a system controller and a patient parameters module, (note Figure 1, elements 12 and 16).

Hood, Jr. fails to teach that the medical device comprises a therapy control module, and a user interface module.

Owen teaches that the medical device comprises a therapy control module, a user interface module and a patient parameters module, (see col. 25, lines 45-50 and col. 26, lines 29-37).

As outlined in Owen, the therapy control module controls transmission of defibrillation energy to a patient, (see col. 31, lines 44-48), and the user interface module serves as a means of communication for an external user to control the medical device operations, (see col. 25, lines 51-67). One of ordinary skill in the art would have clearly recognized the advantages offered by the two modules in a

medical device controlling the output of therapy. The use of a user interface is well known in the art in a device that offers an external operator control over certain functions in the device. Hood, Jr. discloses the use of parameter modules, (Fig. 1, element 16), however, one of ordinary skill in the art would have considered it obvious to include any number of modules according to the functions of a given medical device in view of Hood, Jr. Therefore, in view of Owen, one of ordinary skill in the art would have been properly motivated to include a user interface module and a therapy control module in a medical device as disclosed in Hood, Jr.

Regarding claims 7 and 17, the method and processor-readable medium containing processor-executable instructions described in these claims are rejected based on the same rationale applied above in reference to claim 28. The functionality of both the method and the processor-readable medium containing processor-executable instructions is identical to the functionality of the medical device discussed above.

Regarding claim 30, see Hood, Jr. col. 3, lines 50-57, wherein the patient parameters module is configured to obtain ECG information, vital sign measurements, non-invasive blood pressure measurements, and SpO_2 information from a patient.

Regarding claims 9 and 19, the method and processor-readable medium containing processor-executable instructions described in these claims are rejected based on the same rationale applied above in reference to claim 30. The functionality of both the method and the processor-readable medium containing processor-executable instructions is identical to the functionality of the medical device discussed above.

Regarding claim 31, see Owen, col. 1, lines 46-50.

Regarding claims 10 and 20, the method and processor-readable medium containing processor-executable instructions described in these claims are rejected based on the same rationale applied above in reference to claim 31. The functionality of both the method and the processor-readable medium containing processor-executable instructions is identical to the functionality of the medical device discussed above.

Regarding claim 32, see Hood, Jr., col. 2, lines 46-57, (note that the failsafe supervisor processing means is a hardware unit comprising a watchdog timer function and is interpreted as comprising a watchdog timer hardware unit).

Regarding claims 35, 38 and 41, see Owen, col. 34, lines 42-56.

5. Claims 2, 12, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hood, Jr., in view of Owen, as applied to claims 1, 11 and 21 above, and further in view of Nitschke et al. (U.S. 6,463,555).

Regarding claims 22 and 23, Hood, Jr., in view of Owen, fails to teach that the watchdog timer hardware unit comprises a windowed watchdog timer hardware unit, or that at least one of the first and second embedded processors is configured to reset when the handshake signal is provided before a minimum time or after a maximum time.

Nitschke et al discloses a windowed watchdog timer hardware unit that monitors the function of a processor, and resets the processor when a handshake signal is provided before a minimum time or after a maximum time, (see col. 2, lines 27-34).

Nitschke et al, Hood Jr. and Owen are analogous art because they are from the same field of endeavor, viz., systems for monitoring the operation of a processor for failure using a watchdog timer.

It has already been shown that Hood, Jr., in view of Owen, discloses a medical device in which a watchdog timer software process in a second processor is configured to reset a first processor when the handshake signal is provided after a

maximum time interval. Nitschke et al shows that a processor being monitored by a watchdog timer could also be in error if a handshake signal is received before a minimum time. Such a situation could arise if the program in the processor enters an erroneous loop. Monitoring a processor for a handshake signal provided before a minimum time offers an additional check on the operation of the processor, and improves the reliability of the watchdog timer in detecting a failure event in the processor. One of ordinary skill in the art would have clearly recognized the benefits of using a windowed watchdog timer hardware unit to monitor a processor for failure, in view of Nitschke et al, and would have been properly motivated to include said timer hardware unit in place of the watchdog timer hardware unit taught by Hood, Jr., in view of Owen, in order to improve the system's reliability in detecting faults in a processor.

Regarding claims 2 and 12, the method and processor-readable medium containing processor-executable instructions described in these claims are rejected based on the same rationale applied above in reference to claims 22 and 23. The functionality of both the method and the processor-readable medium containing processor-executable instructions is identical to the functionality of the medical devices discussed above.

6. Claims 4-6, 14-16 and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hood, Jr., in view of Owen, as applied to claims 1, 11 and 21 above, and further in view of Sirazi et al., (U.S. 4,586,179).

Regarding claim 25, Hood, Jr., in view of Owen, fails to teach that the medical device comprises a voltage monitor configured to detect an abnormal power condition and to disable therapy output hardware in response to the abnormal power condition.

Sirazi et al teaches a combination watchdog timer and input voltage level detector circuit coupled to a microprocessor, (see Abstract, lines 1-2). The voltage monitor is configured to detect an abnormal power condition and to disable the microprocessor in response to the abnormal power condition, (note col. 3, lines 38-43).

Sirazi et al, Hood, Jr. and Owen are analogous art because they are from the same field of endeavor, viz., watchdog timing systems used to monitor a processor for failure.

It has already been shown that combining therapy output hardware, as disclosed in Owen, to the medical device disclosed in Hood, Jr., would have been obvious to one of ordinary skill in the art. Siraze teaches a microprocessor that will not function properly in an abnormal power condition, (col. 3, lines 40-43). One of ordinary skill

in the art would have clearly recognized, in view of Siraze, that a watchdog timer combined with a voltage monitor, (see col. 7, lines 36-39), offers an advantage of preventing a microprocessor from attempting to operate in an abnormal power condition, thus preventing the microprocessor from functioning improperly. One of ordinary skill in the art would have clearly recognized that the system taught by Hood, Jr., in view of Owen, relies heavily on power for performing its therapy output function, and would not function properly in an abnormal power condition. It would have been further recognized that an abnormal power condition could create a harmful situation for a patient receiving therapy. Therefore, in view of Siraze et al, one of ordinary skill in the art would have been properly motivated to combine a voltage monitor with the watchdog timer circuitry of Hood, Jr., in view of Owen, in order to prevent the therapy output hardware from functioning improperly and potentially harming a patient.

Regarding claims 4 and 14, the method and processor-readable medium containing processor-executable instructions described in these claims are rejected based on the same rationale applied above in reference to claim 25. The functionality of both the method and the processor-readable medium containing processor-executable instructions is identical to the functionality of the medical device discussed above.

Regarding claims 26 and 27, Hood, Jr., in view of Owen, fails to teach a voltage monitor further configured to detect a voltage of the medical device and to selectively disable therapy output hardware as a function of the detected voltage.

Siraze et al teaches that the voltage monitor is configured to detect a voltage of a device, (note col. 3, lines 7-10), and to selectively disable hardware as a function of the detected voltage, (note col. 3, lines 26-34).

As it has been shown the advantages of disabling therapy output hardware, (as disclosed in Hood, Jr., in view of Owen), in response to an abnormal power condition, it would have been equally obvious to one of ordinary skill in the art to configure the voltage monitor to selectively disable therapy output hardware as a function of a detected erroneous voltage, (refer to discussion of claim 25).

Regarding claims 5, 6, 15 and 16, the methods and processor-readable media containing processor-executable instructions described in these claims are rejected based on the same rationale applied above in reference to claims 26 and 27. The functionality of both the methods and the processor-readable media containing processor-executable instructions is identical to the functionality of the medical devices discussed above.

7. Claims 8, 18, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hood, Jr., in view of Owen, as applied to claims 7, 17 and 28 above, and further in view of official notice.

Regarding claim 29, Hood, Jr., in view of Owen, fails to teach that the user interface module is communicatively coupled to at least one of a keyboard, a display screen, and a strip chart recorder.

Examiner takes official notice that it would have been well known in the art that a user interface module is necessarily coupled to a number of input/output devices for facilitating communication with an external operator. Among those input/output device well known in the art for such a coupling are a keyboard, a display screen, and a strip chart recorder.

One of ordinary skill in the art, in view of official notice, would have considered it obvious to communicatively couple at least one of a keyboard, a display screen, and a strip chart recorder with a user interface module. As would have been well known in the art, the functionality of a user interface module is only available to a user if the user has some means of providing information to, and obtaining information from, the module. Communicatively coupling at least one of a keyboard, a display screen, and a strip chart recorder, offers the advantage of allowing an external operator to

communicatively interact with the user interface module in a medical device. One of ordinary skill in the art would have been properly motivated to include said couplings in order to facilitate communication between the user interface module and an external operator.

Regarding claims 8 and 18, the method and processor-readable medium containing processor-executable instructions described in these claims are rejected based on the same rationale applied above in reference to claim 29. The functionality of both the method and the processor-readable medium containing processor-executable instructions is identical to the functionality of the medical device discussed above.

8. Claims 33, 34, 36, 37, 39 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hood, Jr., in view of Owen, as applied to claims 1, 11 and 21 above, and further in view of Fleming, (US 6,820,221).

Regarding claims 33 and 34, Hood, Jr., in view of Owen, fails to teach the medical device of claim 21 further comprising a third functional module including a third embedded processor configured to generate another handshake signal, wherein:

- the first embedded processor includes another watchdog timer software process to receive the another handshake signal and to reset the third

embedded processor when the another handshake signal is not provided within a prescribed time interval; or

- the watchdog timer software process in the second embedded processor receives the another handshake signal and resets the third embedded processor when the another handshake signal is not provided within a prescribed time interval.

However, Hood, Jr. does teach a plurality of separate modules responsible for key system functions in the medical device, (see col. 3, lines 50-56).

Fleming teaches a watchdog system comprising three functional modules including embedded processors, (see Fig. 1), wherein each module includes a watchdog timer software processes, to receive a handshake signal from each of the other modules, and to take corrective action on one of said embedded processors when one of said handshake signals is not provided within a prescribed time interval by the respective module, (see col. 2, lines 20-27; col. 3, lines 25-27, and 49-55; and col. 4, lines 4-5).

Fleming, Hood, Jr., and Owen are analogous art because they are from the same field of endeavor, viz., detecting processor failure in a system using watchdog timers.

At the time of applicant's invention, one of ordinary skill in the art would have considered it obvious to include a watchdog timer software process in each of the

modules, (elements 16, 12, and 28 in Fig. 1), so that the third module, element 16, is configured to transmit a handshake signal to either the first module, element 12, or the second module, element 28. As a result, either of the embedded processors in the first or second modules would be configured to detect a failure in the third module when said handshake signal was not received within a prescribed time interval , as taught in Fleming, and subsequently reset the embedded processor of the third module, as taught in Hood, Jr., in view of Owen.

One of ordinary skill in the art would have been motivated to combine the teachings because Fleming shows that in detecting failures in a system with distributed system resources, it is desirable to provide alternative paths for determining resource errors, (see col. 2, lines 1-4, and 20-27). Fleming further shows that a failure to receive a heartbeat from one system resource by another system resource could be an indication of either a connection failure or a failure within the sending resource. By utilizing alternate paths to detect resource failures, using watchdog methods, the system is better able to distinguish between connection failures and failures within resources, (see Fleming, col. 1, lines 55-67). One of ordinary skill in the art would have been motivated to use a watchdog software process in each of three modules in the system disclosed in Hood, Jr., in view of Owen, in the configuration described above, in order to prevent unnecessary corrective actions when a heartbeat fails to transmit from one module to another, (note Fleming, col. 1, lines 64-67, and col. 2, line 1).

Regarding claims 36, 37, 39 and 40, the method and processor-readable medium containing processor-executable instructions described in these claims are rejected based on the same rationale applied above in reference to claim 33 and 34. The functionality of both the method and the processor-readable medium containing processor-executable instructions is identical to the functionality of the medical device discussed above.

Allowable Subject Matter

9. Claims 42-46 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

10. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 42, the limitation, "wherein the therapy control module includes a watchdog timer software process on the first processor to reset the first processor when the second handshake signal is not generated within the first time interval," in combination with the other limitations of the claim, was not found in any prior art.

Response to Arguments

11. Applicant's arguments, see pages 13-19, filed 11/26/2004 have been fully considered but they are not persuasive.

12. On page 15, under section **CLAIM REJECTIONS – 35 U.S.C 103**, with respect to claims 1, 3, 7, 9, 11, 13, 17, 19, 21, 24, 28 and 30, the applicant argues that, "the claimed invention requires a watchdog timer software process that corresponds to a watchdog timer hardware unit. The watchdog timer software process, running on a second processor of a second functional module, receives a handshake signal from a first processor running on a first functional module. If a handshake signal is not provided to the watchdog timer software process within a prescribed time interval, the first processor receives a reset signal."

As interpreted by the examiner, Hood, Jr. teaches a medical device, ("patient monitor", see col. 1, line 9), comprising a first functional module comprising a first embedded processor, (note Figure 1, CPU 12), configured to generate a handshake signal, (see col. 2, lines 5-8), and a second functional module comprising a second embedded processor, (note Figure 1, processor 28; also note col. 1, lines 58-60 in which failsafe supervisor system is implemented in a separate one-chip module), with a watchdog timer software process corresponding to the watchdog timer hardware unit, (see col. 2, lines 45-53, and note col. 5, lines 25-26), configured to

receive the handshake signal, (see col. 2, lines 13-19), and to power down said first embedded processor into a safe state when the handshake signal is not provided within a prescribed time interval, (note col. 2, lines 45-53). The failsafe supervisor processing means, (see col. 2, lines 46-57), is a hardware unit comprising a watchdog timer function. Therefore, the failsafe supervisor of Hood, Jr. is interpreted as being a watchdog timer hardware unit.

Hood, Jr. fails to teach that the second embedded processor is configured to reset the first embedded processor when the handshake signal is not provided within a prescribed time interval.

Owen teaches a medical device, (see Abstract), in which a watchdog timer software process corresponding to a watchdog timer hardware unit is configured to reset a first embedded processor when a handshake signal is not detected within a prescribed time interval, (see col. 34, lines 42-59).

As Hood, Jr. teaches that said second embedded processor is able to both power up and power down said first embedded processor, one of ordinary skill in the art, in view of Owen, would have clearly recognized that the step of powering down said first embedded processor upon the detection of failure could be replaced with the step of resetting said first embedded processor. Owen teaches a medical device in which the cause of failure can be corrected by resetting said first embedded

processor, (see col. 34, lines 57-59). The step of automatically resetting the first embedded processor to correct the cause of failure eliminates the requirement of having an external operator monitor the device. One of ordinary skill in the art would have been motivated to include the step of resetting said first embedded processor in the system disclosed in Hood, Jr. in the event that said step of resetting would correct the cause of failure, in order to eliminate the requirement of an external operator monitoring the device, (note Owen, col. 34, lines 59-67).

Applicant further argues, on page 15, that "Hood, Jr., describes neither a watchdog timer software process, as defined by the claims, nor any medical device in which a processor in one functional module resets a processor in another functional module." The examiner respectfully disagrees.

As interpreted by the examiner, Hood, Jr., as modified above by Owen, teaches both a watchdog timer software process, (see Hood, Jr., col. 2, lines 45-53, and note col. 5, lines 25-26), and a medical device in which a processor in one functional module resets a processor in another functional module, (note Hood, Jr., col. 2, lines 45-53, wherein elements 12 and 28 from Fig. 1 are said processor in one functional module and said processor in another function module, respectively; also recall examiner's arguments above regarding modifying Hood, Jr., with the teachings of Owen to

arrive at the explicit teaching of resetting the first processor by the second processor).

Applicant further argues, on page 15, that, "modification of the Hood, Jr., device...would not provide a watchdog timer software process in a second processor in a second functional module to receive a handshake signal from a first processor in a first functional module." The examiner respectfully disagrees.

As interpreted by the examiner, Hood, Jr., teaches, (see col. 2, lines 45-53 and note col. 5, lines 25-26), a watchdog timer software process in a second processor in a second functional module, (element 28 of Fig. 1), to receive a handshake signal from a first processor in a first functional module, (element 12 of Fig. 1).

13. On page 16, with respect to claims 2, 12, 22, and 23, applicant argues that "modification of the Hood, Jr., device...would not provide a watchdog timer software process in a second embedded processor, where the watchdog timer software process corresponds to a windowed watchdog timer." The examiner respectfully disagrees.

As interpreted by examiner, Hood, Jr., in view of Owen, fails to teach that the watchdog timer hardware unit comprises a windowed watchdog timer hardware unit,

or that at least one of the first and second embedded processors is configured to reset when the handshake signal is provided before a minimum time or after a maximum time. However, Hood, Jr., does teach, (see col. 2, lines 45-53 and note col. 5, lines 25-26), a watchdog timer software process in a second processor.

Nitschke et al discloses a windowed watchdog timer hardware unit that monitors the function of a processor, and resets the processor when a handshake signal is provided before a minimum time or after a maximum time, (see col. 2, lines 27-34).

It has already been shown that Hood, Jr., in view of Owen, discloses a medical device in which a watchdog timer software process in a second processor is configured to reset a first processor when the handshake signal is provided after a maximum time interval. Nitschke et al shows that a processor being monitored by a watchdog timer could also be in error if a handshake signal is received before a minimum time. Such a situation could arise if the program in the processor enters an erroneous loop. Monitoring a processor for a handshake signal provided before a minimum time offers an additional check on the operation of the processor, and improves the reliability of the watchdog timer in detecting a failure event in the processor. One of ordinary skill in the art would have clearly recognized the benefits of using a windowed watchdog timer hardware unit to monitor a processor for failure, in view of Nitschke et al, and would have been properly motivated to include said timer hardware unit in place of the watchdog timer hardware unit taught by Hood, Jr.,

in view of Owen, in order to improve the system's reliability in detecting faults in a processor. Since it has already been shown that the watchdog timer software process corresponds to the watchdog timer hardware unit, Hood, Jr., in view of Owen and Nitschke, teaches a watchdog timer software process corresponding to a windowed watchdog timer hardware unit.

14. One page 17, with respect to claims 4-6, 14-16, and 25-27, applicant argues that the "modification of the Hood, Jr. device...would not provide a voltage monitor in the medical device that includes a watchdog timer software process in the second embedded processor corresponding to a watchdog timer." The examiner respectfully disagrees.

As interpreted by examiner, Hood, Jr., in view of Owen, fails to teach that the medical device comprises a voltage monitor configured to detect an abnormal power condition and to disable therapy output hardware in response to the abnormal power condition. However, Hood, Jr., does teach, (see col. 2, lines 45-53 and note col. 5, lines 25-26), a watchdog timer software process in a second processor corresponding to a watchdog timer hardware unit, (see, also, Fig. 1, element 28, which is interpreted as both a second processor and a watchdog timer hardware unit).

Sirazi et al teaches a combination watchdog timer and input voltage level detector circuit coupled to a microprocessor, (see Abstract, lines 1-2). The voltage monitor is configured to detect an abnormal power condition and to disable the microprocessor in response to the abnormal power condition, (note col. 3, lines 38-43).

It has already been shown that combining therapy output hardware, as disclosed in Owen, to the medical device disclosed in Hood, Jr., would have been obvious to one of ordinary skill in the art. Siraze teaches a microprocessor that will not function properly in an abnormal power condition, (col. 3, lines 40-43). One of ordinary skill in the art would have clearly recognized, in view of Siraze, that a watchdog timer combined with a voltage monitor, (see col. 7, lines 36-39), offers an advantage of preventing a microprocessor from attempting to operate in an abnormal power condition, thus preventing the microprocessor from functioning improperly. One of ordinary skill in the art would have clearly recognized that the system taught by Hood, Jr., in view of Owen, relies heavily on power for performing its therapy output function, and would not function properly in an abnormal power condition. It would have been further recognized that an abnormal power condition could create a harmful situation for a patient receiving therapy. Therefore, in view of Siraze et al, one of ordinary skill in the art would have been properly motivated to combine a voltage monitor with the watchdog timer circuitry of Hood, Jr., in view of Owen, in order to prevent the therapy output hardware from functioning improperly and potentially harming a patient.

15. On page 18, in reference to claims 8, 18, 29, applicant argues that "although the Examiner's resort to official notice is suspect, it is generally immaterial for purposes of this response." It is noted that Applicant has not traversed Examiner's assertion(s) of official notice. It is hereby clearly indicated that the common knowledge or well-known in the art statement is taken to be admitted prior art because Applicant has failed to traverse Examiner's assertion(s) of official notice. See MPEP 2144.04 C.

Conclusion

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing

date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron D Matthew whose telephone number is (571) 272-3662. The examiner can normally be reached on Mon-Fri, from 8:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert W Beausoliel can be reached on (571) 272-3645. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Aaron D Matthew
Examiner
Art Unit 2114

ADM

ROBERT BEAUSOLIEL
SUPERVISORY PATENT EXAMINER
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